

TABLE B.1. Correlation Between Benkelman Beam and Dynaflect Deflections

Utility Cut Description	Traffic	Test Point Location	Dynaflect Deflection (in.)	Benkelman Beam Deflection (in.)
UCASPCLIHUC-1	H	control	0.00043	0.012
		1' from edge	0.00047	0.017
		cut edge, pvmnt	0.00062	0.018
		cut edge, cut	0.00071	0.014
		center of cut	0.00058	0.023
UCASP8TH304N-1	M	control	0.00076	0.034
		1' from edge	0.00116	0.037
		cut edge, pvmnt	0.00123	0.051
		cut edge, cut	0.00141	0.048
		center of cut	0.00119	0.037
UCASP8TH304S-1	M	control	0.00078	0.028
		1' from edge	0.00079	0.029
		cut edge, pvmnt	0.00087	0.024
		cut edge, cut	0.00116	0.030
		center of cut	0.00138	0.035
UCMACBEK3411-1	H	control	0.00066	0.030
		1' from edge	0.00067	0.027
		cut edge, pvmnt	0.00077	0.030
		cut edge, cut	0.00076	0.039
		center of cut	0.00097	0.039
UCMACOBS2881-1	M	control	0.0010	0.024
		1' from edge	0.00118	0.028
		cut edge, pvmnt	0.00145	0.042
		cut edge, cut	0.00111	0.032
		center of cut	0.00136	0.021
UCMACMON3431-1	L	control	0.00216	0.111
		1' from edge	0.00243	0.130
		cut edge, pvmnt	0.00222	0.103
		cut edge, cut	0.00214	0.124
		center of cut	0.00133	0.033

TABLE B.2. Correlation Between Benkelman Beam and FWD-9 kip Deflections

Utility Cut Description	Traffic	Load (kips)	Test Point Location	FWD Deflection (in.)	Benkelman Beam Deflection (in.)
UCASPCLIHUC	H	9	cut edge, pvmnt.	0.01284	0.018
			1' from edge	0.010755	0.017
			2' from edge	0.00807	0.013
			4' from edge	0.00678	0.011
			control	0.0093	0.012
UCASPLIN859	M	9	cut edge, pvmnt.	0.0406704	0.143
			1' from edge	0.0353757	0.117
			2' from edge	0.0311688	0.091
			4' from edge	0.0348873	0.086
			control	0.0341991	0.087
UCASP8TH304S	M	9	cut edge, pvmnt.	0.019815	0.024
			1' from edge	0.016428	0.029
			2' from edge	0.022065	0.036
			4' from edge	0.0187812	0.032
			control	0.02775	0.026
UCMACOBS2881	M	9	cut edge, pvmnt.	0.02862	0.042
			1' from edge	0.02256	0.028
			2' from edge	0.019875	0.025
			4' from edge	0.018705	0.025
			control	0.02061	0.024
UCMACOBS3044	M	9	cut edge, pvmnt.	0.02574	0.049
			1' from edge	0.0228	0.051
			2' from edge	0.020355	0.046
			4' from edge	0.01968	0.045
			control	0.02226	0.048
UCMACLAF402	M	9	cut edge, pvmnt.	0.0334512	0.058
			1' from edge	0.0307008	0.062
			2' from edge	0.0278784	0.057
			4' from edge	0.0275328	0.051
			control	0.0122112	0.021
UCMACWTF3332	M	9	cut edge, pvmnt.	0.0322272	0.033
			1' from edge	0.0308736	0.037
			2' from edge	0.0292896	0.039
			4' from edge	0.0327456	0.035
			control	0.0290016	0.032

TABLE B.2. (Contd)

Utility Cut Description	Traffic	Load (kips)	Test Point Location	FWD Deflection (in.)	Benkeiman Beam Deflection (in.)
UCASPPRK2324	L	9	cut edge, pvmnt. 1' from edge 2' from edge 4' from edge control	0.0244755 0.0266955 0.0252414 0.0222111 0.0181929	0.077 0.067 0.058 0.06 0.054
UCASPFFD3054	L	9	cut edge, pvmnt. 1' from edge 2' from edge 4' from edge control	0.0300587 0.0353073 0.0398958 0.041538 0.0324254	0.037 0.05 0.046 0.044 0.047
UCASPROC1005	L	9	cut edge, pvmnt. 1' from edge 2' from edge 4' from edge control	0.1038128 0.0875196 0.0865536 0.0782299 0.0803229	0.128 0.137 0.14 0.114 0.119
UCMACDUN3422	L	9	cut edge, pvmnt. 1' from edge 2' from edge 4' from edge control	0.086085 0.09006 0.089625 0.08022 0.081135	0.131 0.135 0.147 0.127 0.13
UCMACMON3431	L	9	cut edge, pvmnt. 1' from edge 2' from edge 4' from edge control	0.092265 0.10167 0.094515 0.08181 0.07392	0.103 0.13 0.112 0.114 0.111
UCMACMON3579	L	9	cut edge, pvmnt. 1' from edge 2' from edge 4' from edge control	0.057405 0.0582 0.052395 0.04818 0.055695	0.055 0.071 0.064 0.072 0.091

TABLE B.3. Correlation Between Benkelman Beam and FWD-12 kip Deflections

Utility Cut Description	Traffic	Load (kips)	Test Point Location	FWD Deflection (in.)	Benkelman Beam Deflection (in.)
UCASPCLIHUC	H	12	cut edge, pvmt.	0.016875	0.018
			1' from edge	0.013995	0.017
			2' from edge	0.010635	0.013
			4' from edge	0.008985	0.011
			control	0.01266	0.012
UCASPLIN859	M	12	cut edge, pvmt.	0.0542457	0.143
			1' from edge	0.0474636	0.117
			2' from edge	0.0418914	0.091
			4' from edge	0.047952	0.086
			control	0.0459207	0.087
UCASP8TH304S	M	12	cut edge, pvmt.	0.025065	0.024
			1' from edge	0.02751	0.029
			2' from edge	0.027885	0.036
			4' from edge	0.031365	0.032
			control	0.034305	0.026
UCMACOBS2881	M	12	cut edge, pvmt.	0.037485	0.042
			1' from edge	0.03027	0.028
			2' from edge	0.026775	0.025
			4' from edge	0.025245	0.025
			control	0.028005	0.024
UCMACOBS3044	M	12	cut edge, pvmt.	0.03357	0.049
			1' from edge	0.03087	0.051
			2' from edge	0.02733	0.046
			4' from edge	0.026535	0.045
			control	0.03045	0.048
UCMACLAF402	M	12	cut edge, pvmt.	0.0447264	0.058
			1' from edge	0.0411984	0.062
			2' from edge	0.0377424	0.057
			4' from edge	0.0372672	0.051
			control	0.0165456	0.021
UCMACWTF3332	M	12	cut edge, pvmt.	0.04284	0.033
			1' from edge	0.04068	0.037
			2' from edge	0.0385056	0.039
			4' from edge	0.042552	0.035
			control	0.0383904	0.032

TABLE B.3. (Contd)

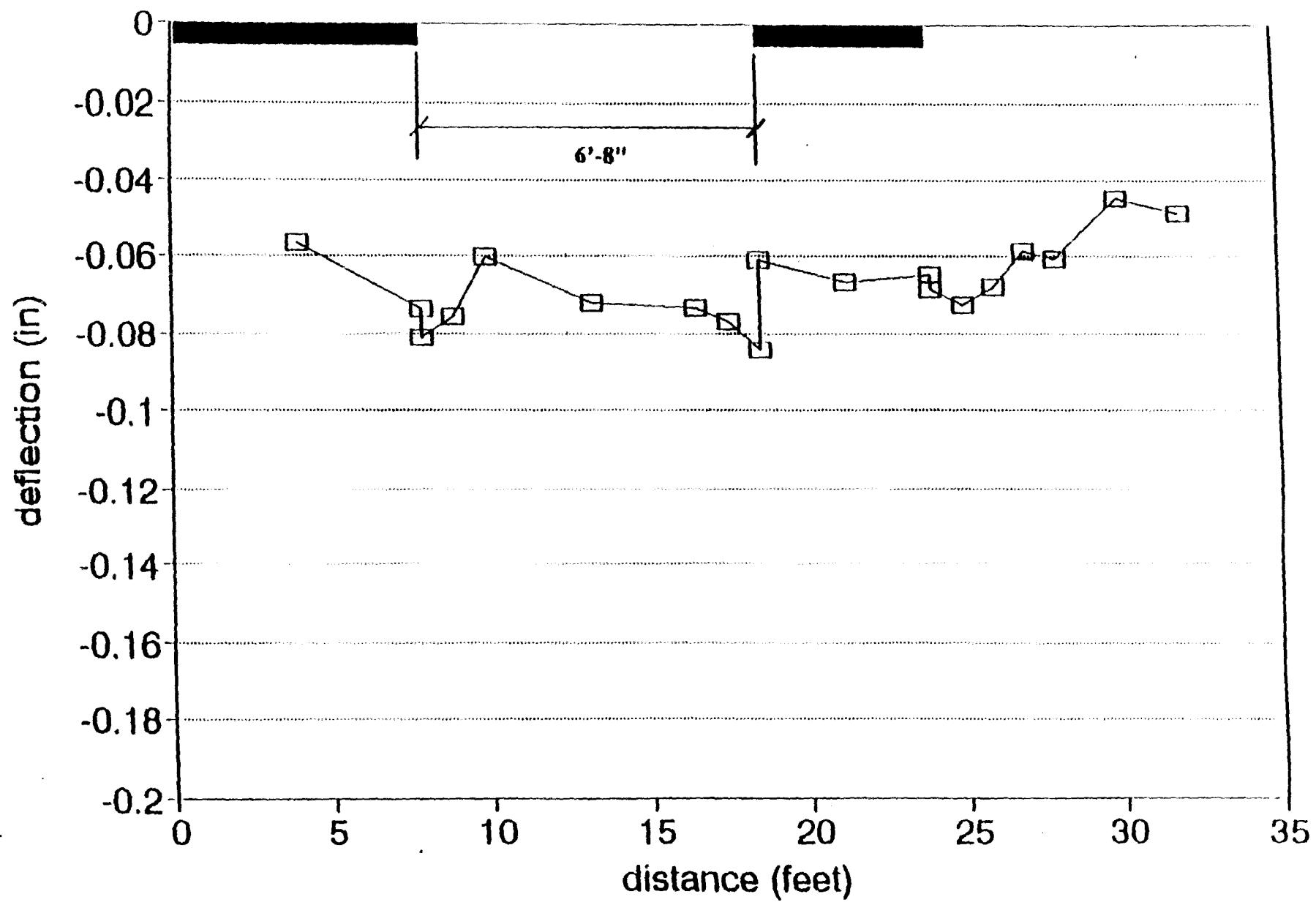
Utility Cut Description	Traffic	Load (kips)	Test Point Location	FWD Deflection (in.)	Benkelman Beam Deflection (in.)
UCASPPRK2324	L	12	cut edge, pvt. 1' from edge 2' from edge 4' from edge control	0.0324897 0.0348318 0.0348318 0.029859 0.0239316	0.077 0.067 0.058 0.06 0.054
UCASPFFD3054	L	12	cut edge, pvt. 1' from edge 2' from edge 4' from edge control	0.0384468 0.0473179 0.051842 0.0559153 0.0438403	0.037 0.05 0.046 0.044 0.047
UCASPROC1005	L	12	cut edge, pvt. 1' from edge 2' from edge 4' from edge control	0.1337427 0.1255317 0.1151633 0.1060507 0.1079505	0.128 0.137 0.14 0.114 0.119
UCMACDUN3422	L	12	cut edge, pvt. 1' from edge 2' from edge 4' from edge control	0.113235 0.12276 0.131145 0.113775 0.11304	0.131 0.135 0.147 0.127 0.13
UCMACMON3431	L	12	cut edge, pvt. 1' from edge 2' from edge 4' from edge control	0.12057 0.128145 0.121425 0.110595 0.097515	0.103 0.13 0.112 0.114 0.111
UCMACMON3579	L	12	cut edge, pvt. 1' from edge 2' from edge 4' from edge control	0.076185 0.074955 0.068475 0.063765 0.072945	0.055 0.071 0.064 0.072 0.091

TABLE B.4. Correlation Between FWD-15 kip and Benkelman Beam Deflections

Utility Cut	Traffic	Load (kips)	Test Point Location	FWD Deflection (in.)	Benkelman Beam Deflection (in.)
UCASPCLIHUC	H	15	cut edge, pvmnt.	0.02091	0.018
			1' from edge	0.017115	0.017
			2' from edge	0.0132	0.013
			4' from edge	0.01131	0.011
			control	0.01596	0.012
UCASPLIN859	M	15	cut edge, pvmnt.	0.067821	0.143
			1' from edge	0.0597624	0.117
			2' from edge	0.0531135	0.091
			4' from edge	0.0613941	0.086
			control	0.058275	0.087
UCASP8TH304S	M	15	cut edge, pvmnt.	0.03033	0.024
			1' from edge	0.032655	0.029
			2' from edge	0.033315	0.036
			4' from edge	0.03711	0.032
			control	0.04059	0.026
UCMACOBS2881	M	15	cut edge, pvmnt.	0.04695	0.042
			1' from edge	0.03852	0.028
			2' from edge	0.034305	0.025
			4' from edge	0.03228	0.025
			control	0.03582	0.024
UCMACOBS3044	M	15	cut edge, pvmnt.	0.04152	0.049
			1' from edge	0.039375	0.051
			2' from edge	0.034845	0.046
			4' from edge	0.03405	0.045
			control	0.039315	0.048
UCMACLAF402	M	15	cut edge, pvmnt.	0.0565776	0.058
			1' from edge	0.0518256	0.062
			2' from edge	0.0481824	0.057
			4' from edge	0.0476064	0.051
			control	0.0210672	0.021
UCMACWTF3332	M	15	cut edge, pvmnt.	0.0536976	0.033
			1' from edge	0.0507168	0.037
			2' from edge	0.0478368	0.039
			4' from edge	0.0524736	0.035
			control	0.0483696	0.032

TABLE B.4. (Contd)

Utility Cut Description	Traffic	Load (kips)	Test Point Location	FWD Deflection (in.)	Benkeiman Beam Deflection (in.)
UCASPPRK2324	L	15	cut edge, pvm _L	0.0411699	0.077
			1' from edge	0.0466422	0.067
			2' from edge	0.0422133	0.058
			4' from edge	0.039405	0.06
			control	0.030081	0.054
UCASPFFD3054	L	15	cut edge, pvm _L	0.048622	0.037
			1' from edge	0.0570906	0.05
			2' from edge	0.0644483	0.046
			4' from edge	0.0714035	0.044
			control	0.0570262	0.047
UCASPROC1005	L	15	cut edge, pvm _L	0.1746206	0.128
			1' from edge	0.1529661	0.137
			2' from edge	0.145544	0.14
			4' from edge	0.1330826	0.114
			control	0.1367534	0.119
UCMACDUN3422	L	15	cut edge, pvm _L	0.142215	0.131
			1' from edge	0.139515	0.135
			2' from edge	0.143925	0.147
			4' from edge	0.147345	0.127
			control	0.14532	0.13
UCMACMON3431	L	15	cut edge, pvm _L	0.14685	0.103
			1' from edge	0.137685	0.13
			2' from edge	0.14508	0.112
			4' from edge	0.136395	0.114
			control	0.122895	0.111
UCMACMON3579	L	15	cut edge, pvm _L	0.09624	0.055
			1' from edge	0.092505	0.071
			2' from edge	0.086085	0.064
			4' from edge	0.079965	0.072
			control	0.09195	0.091



**FIG. B.1. Deflections between Multiple Cuts at Intersection
between Reading and Forest .**

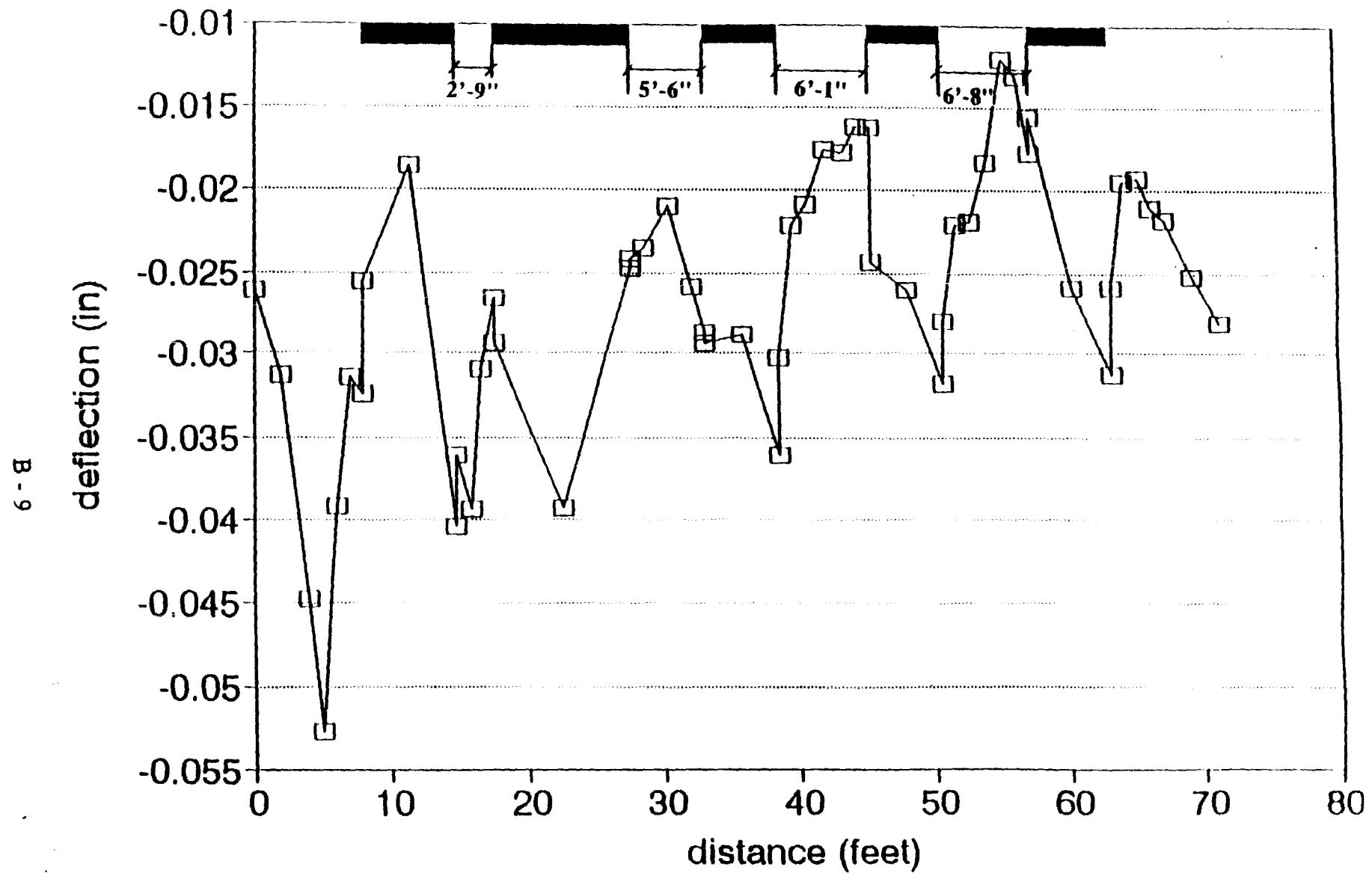


FIG. B.2. Deflections between Multiple Cuts at 3161 Reading

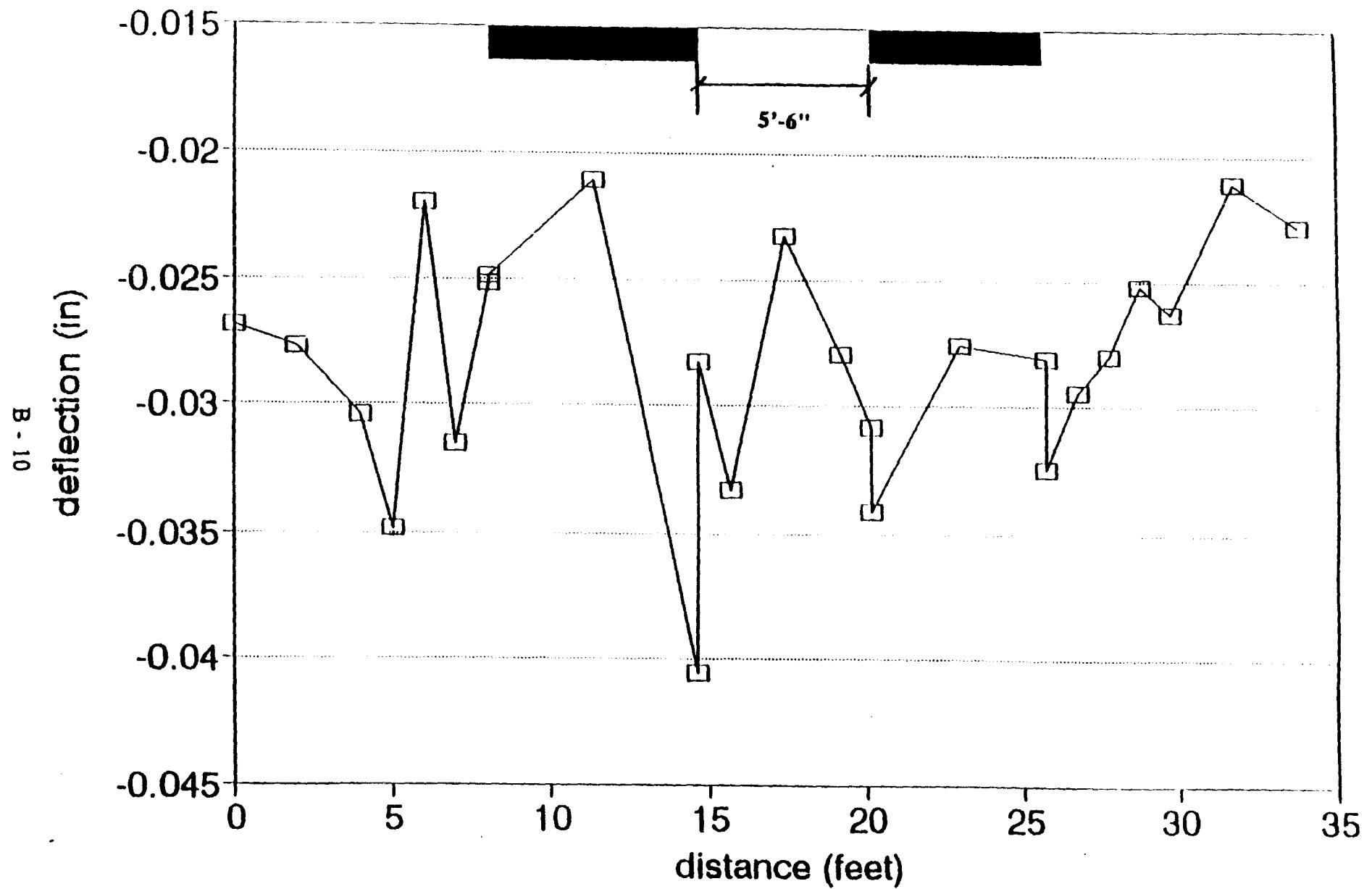


FIG. B.3. Deflections between Multiple Cuts at 3215 Madison

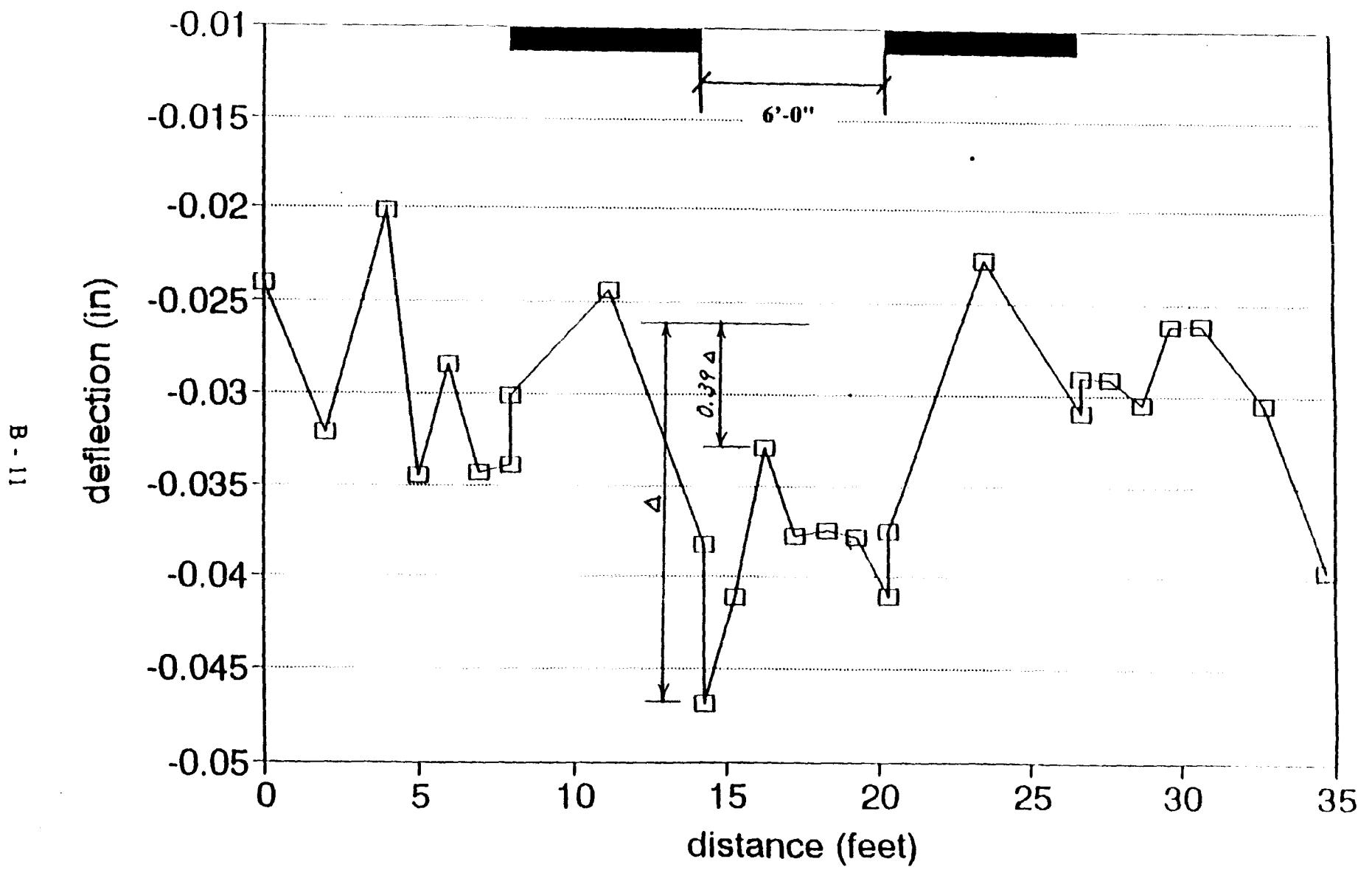


FIG. B.4. Deflections between Multiple Cuts at 2741 Observatory

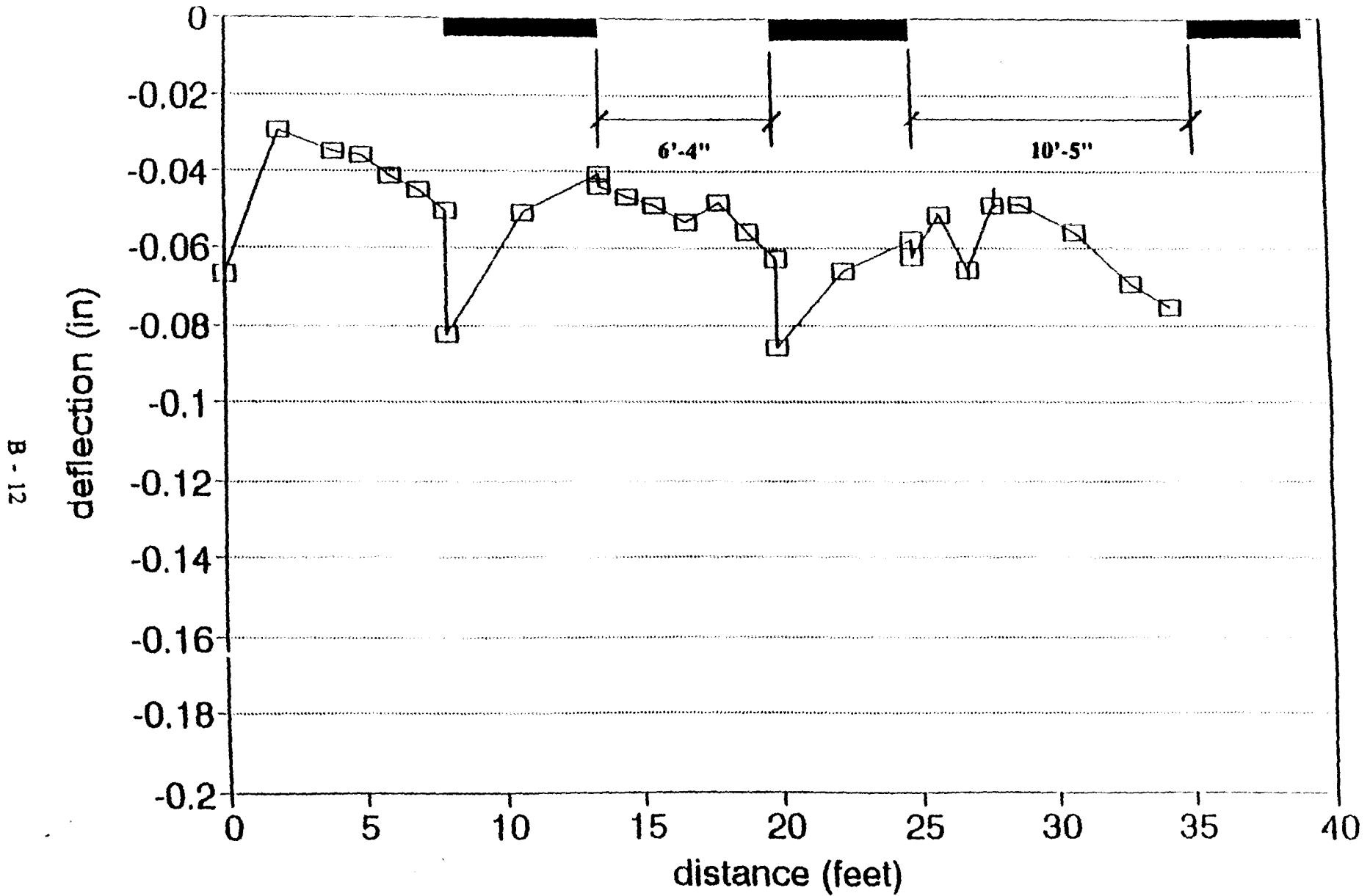


FIG. B.5. Deflections between Multiple Cuts at 2724 Madison

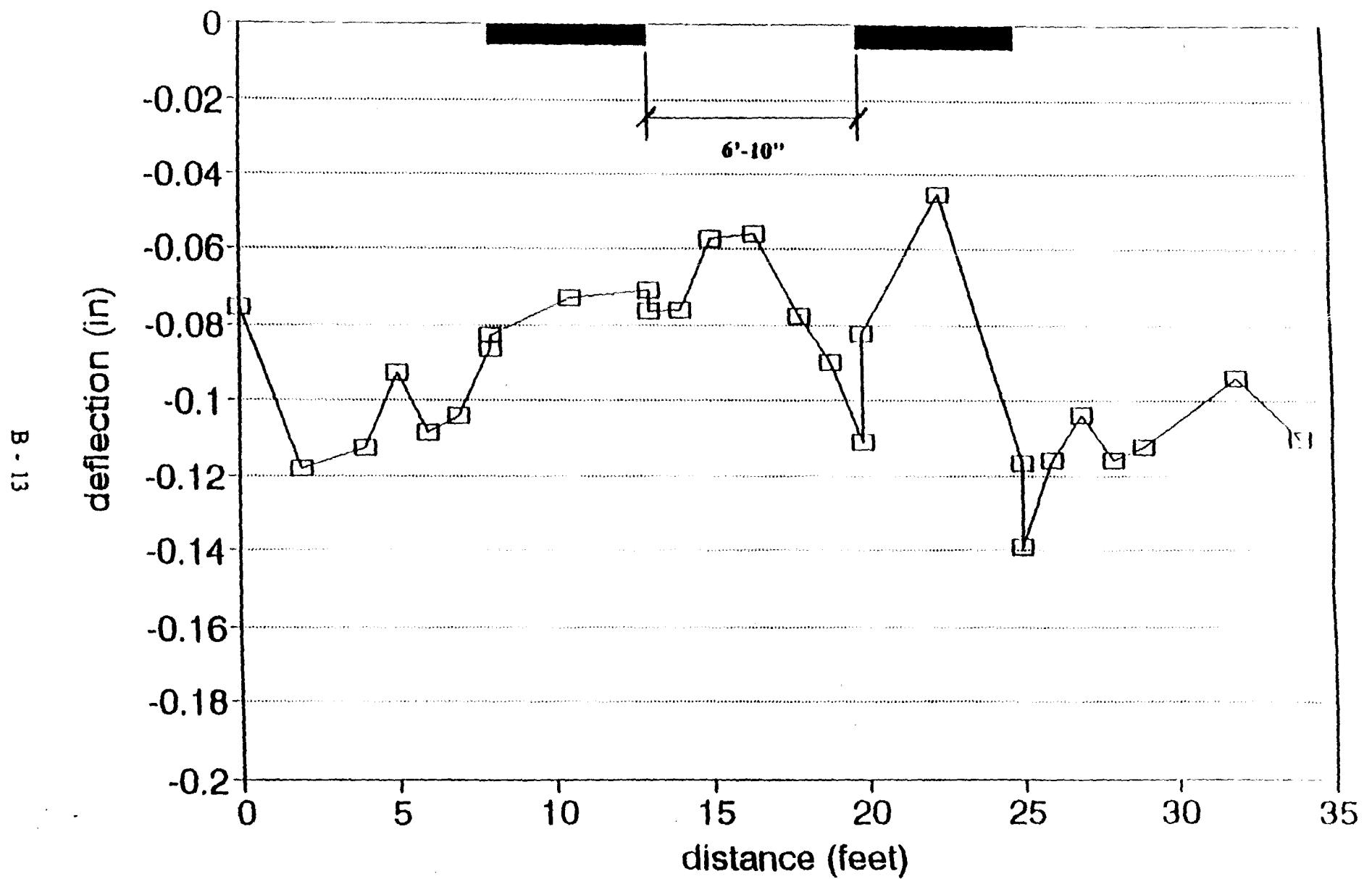


FIG. B.6. Deflections between Multiple Cuts at 2723 Markbrett

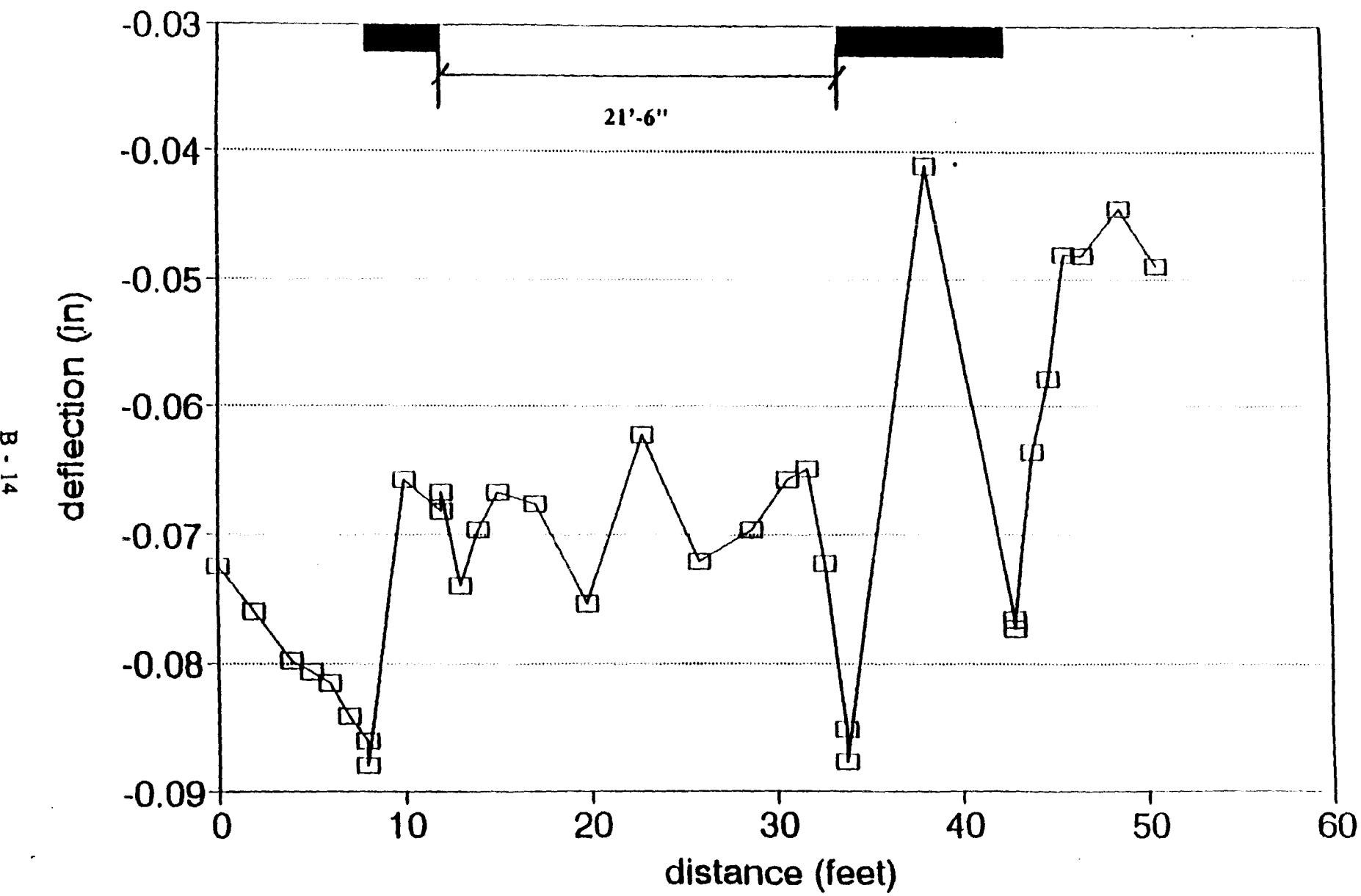


FIG. B.7. Deflections between Multiple Cuts at 2901 Markbreit

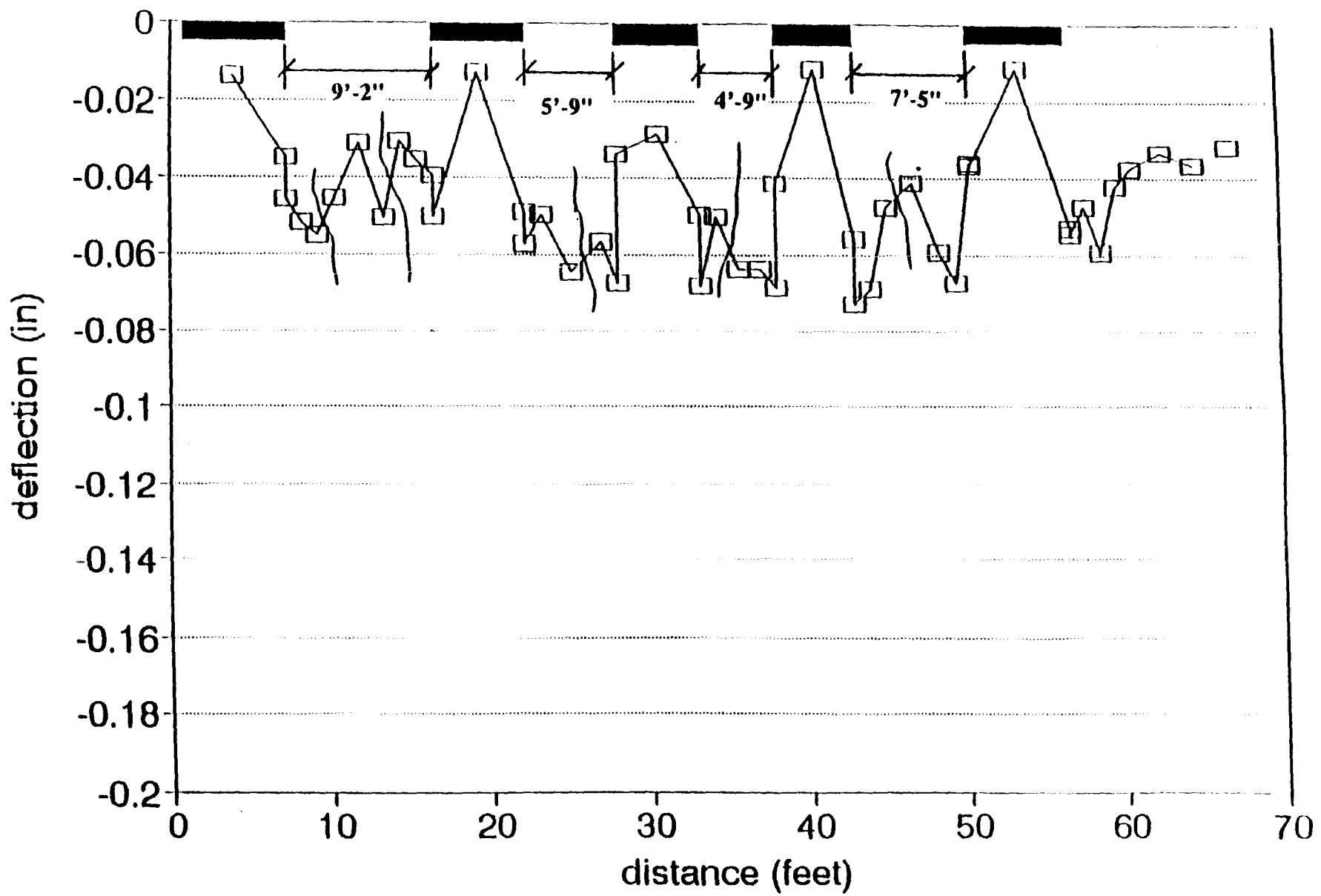


FIG. B.8. Deflections between Multiple Cuts at 3016 Euclid

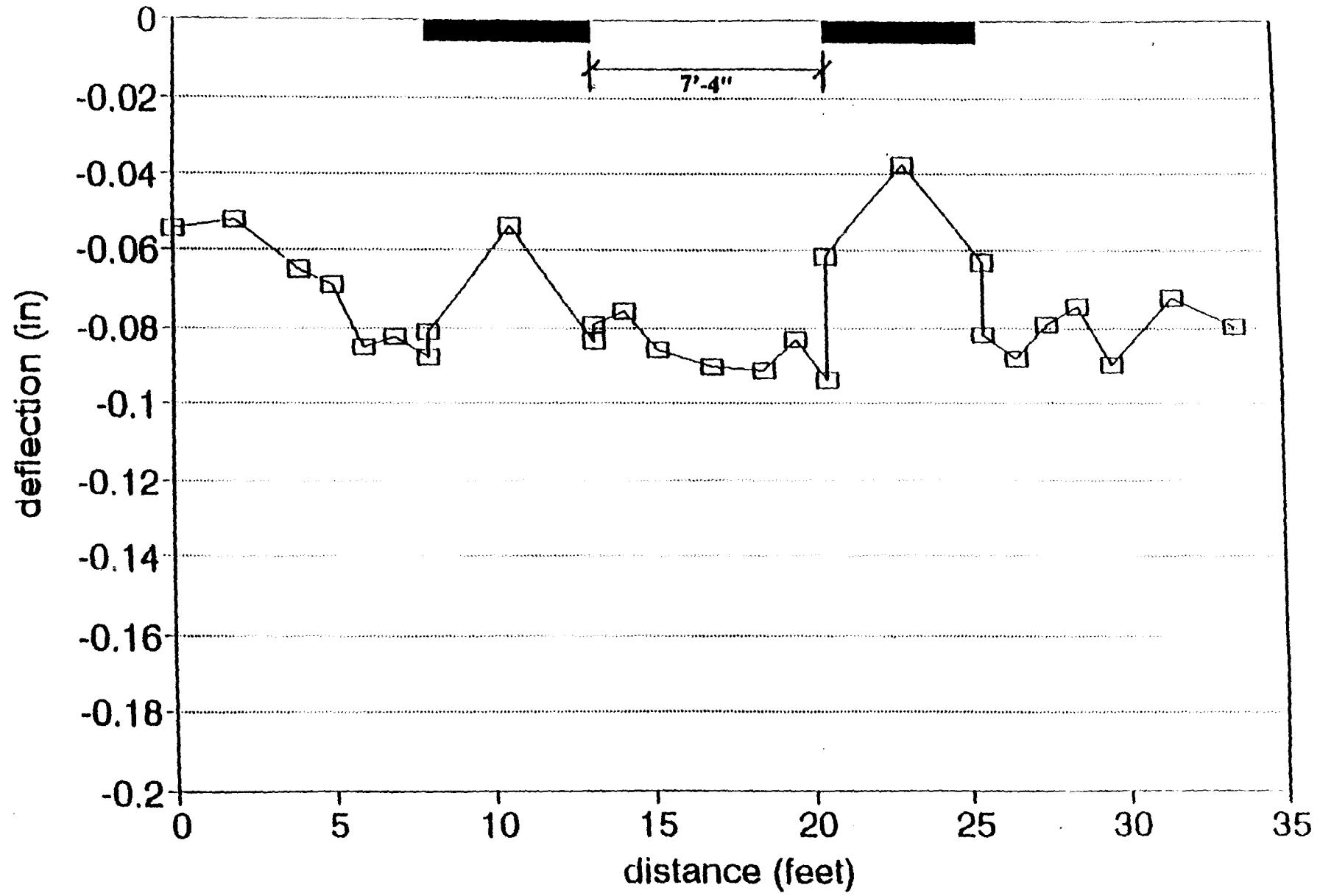


FIG. B.9. Deflections between Multiple Cuts at 3357 Woodford

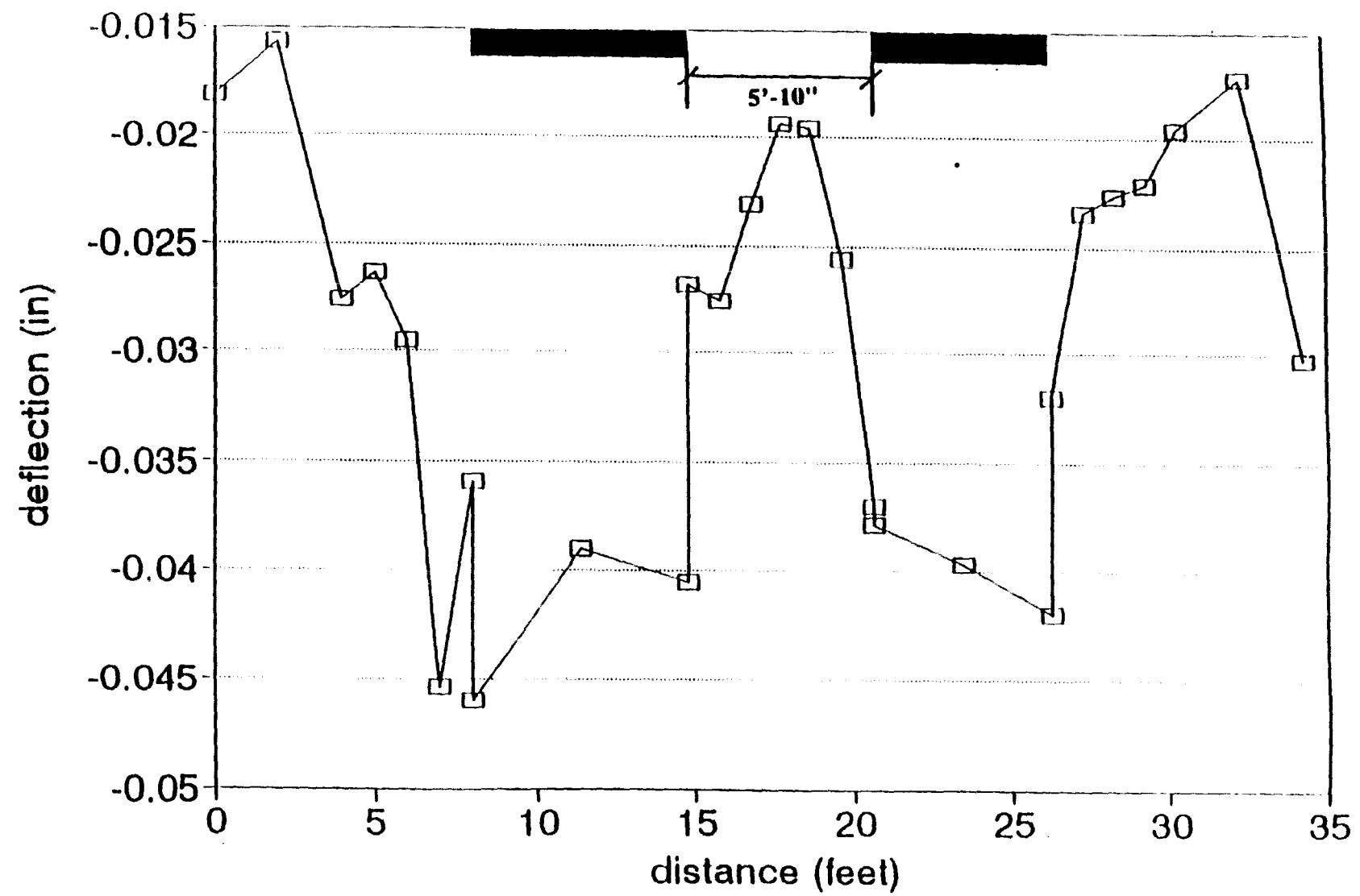


FIG. B.10. Deflections between Multiple Cuts at 822 Seton

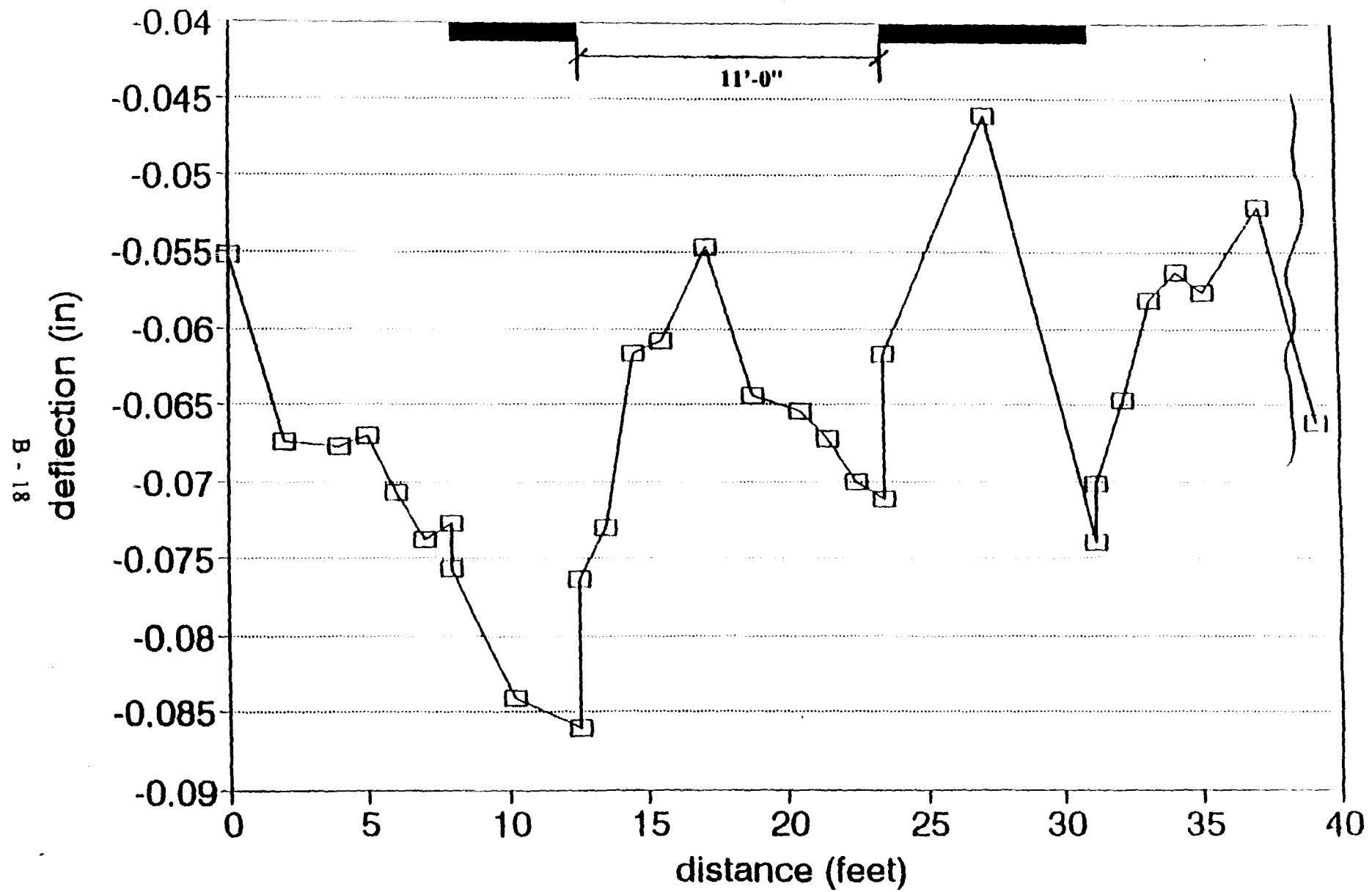


FIG. B.11. Deflections between Multiple Cuts at 321 Helen

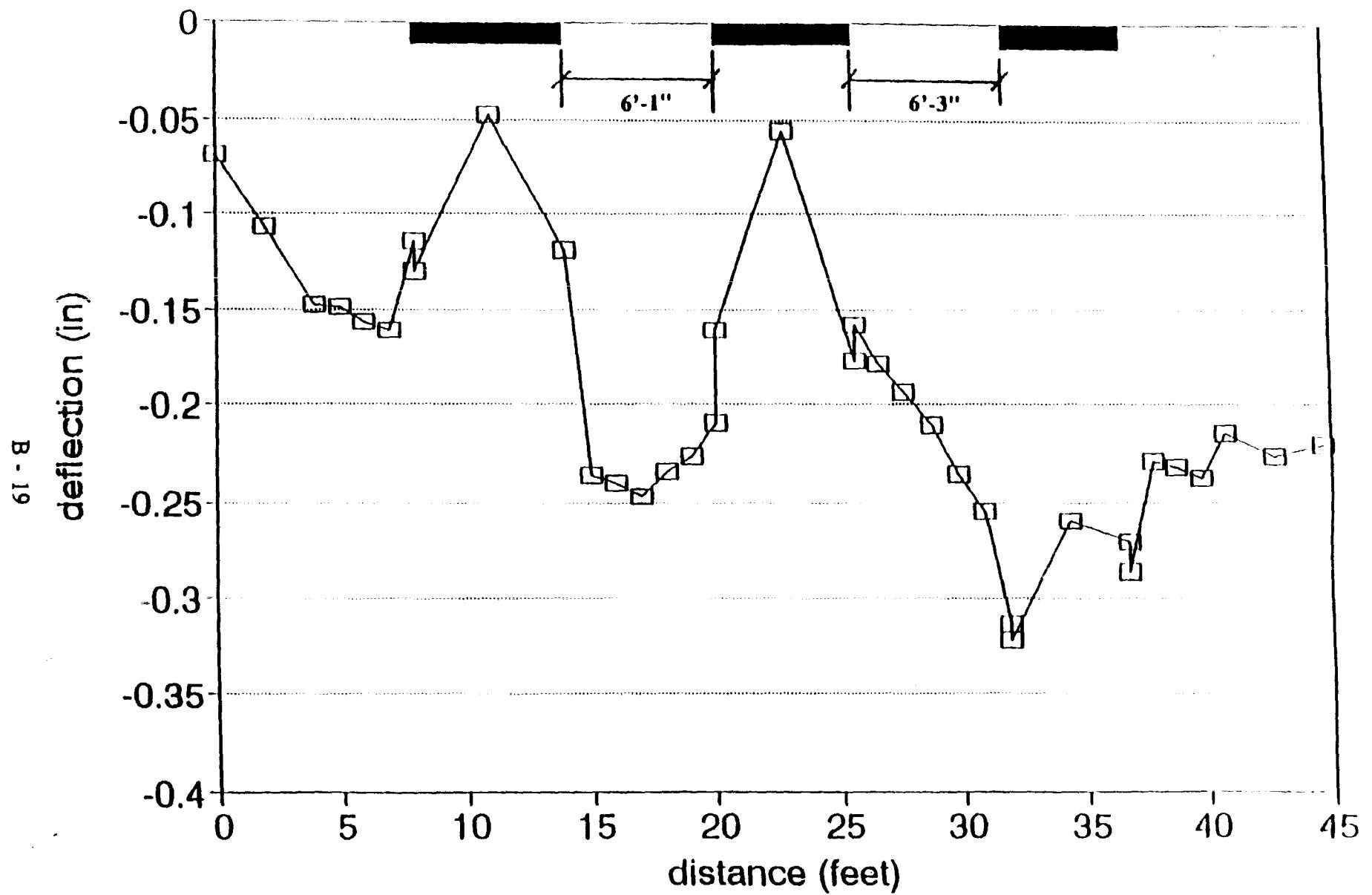


FIG. B.12. Deflections between Multiple Cuts at 346 Terrace

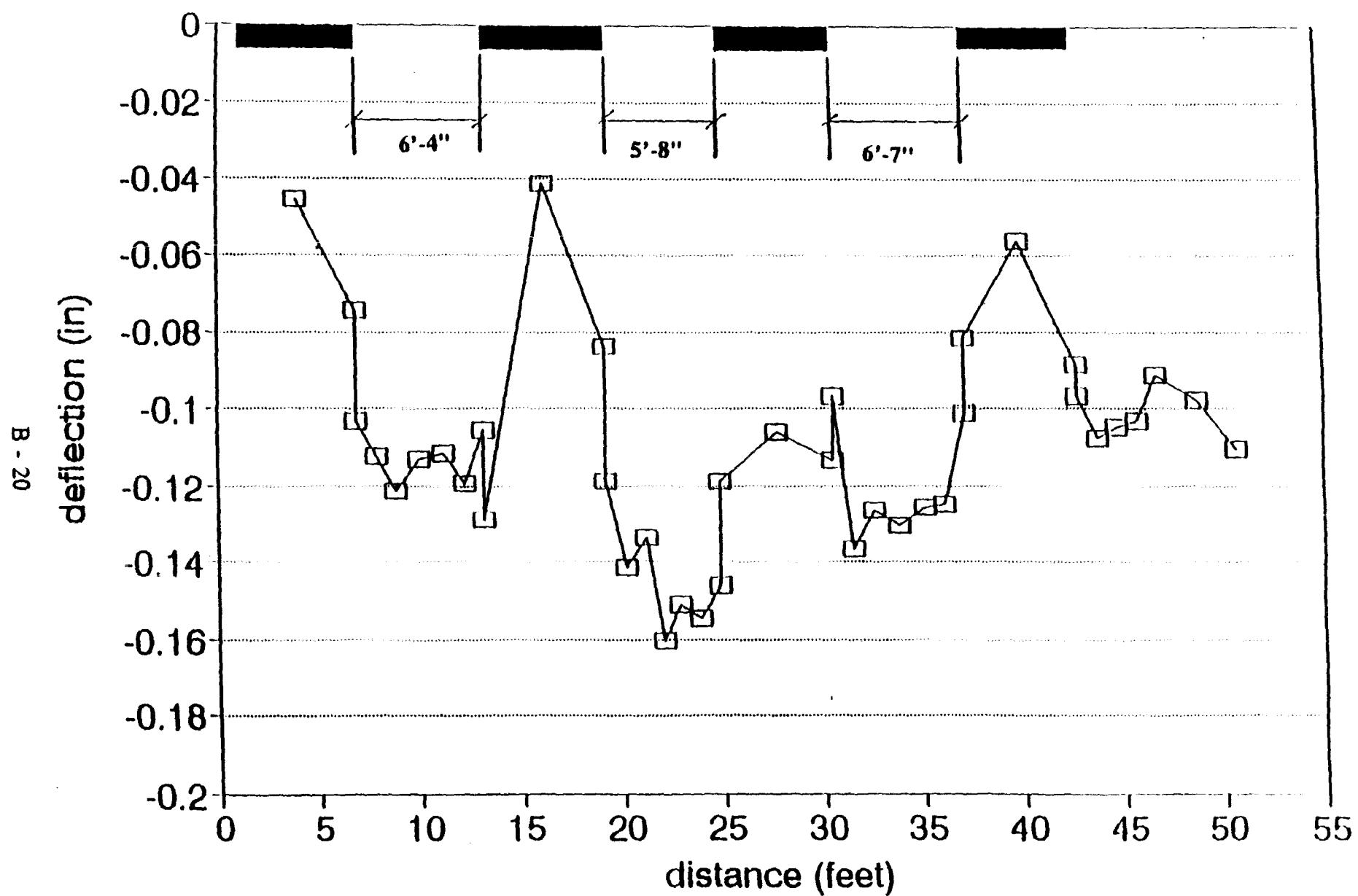


FIG. B.13. Deflections between Multiple Cuts at 3228 Harvest

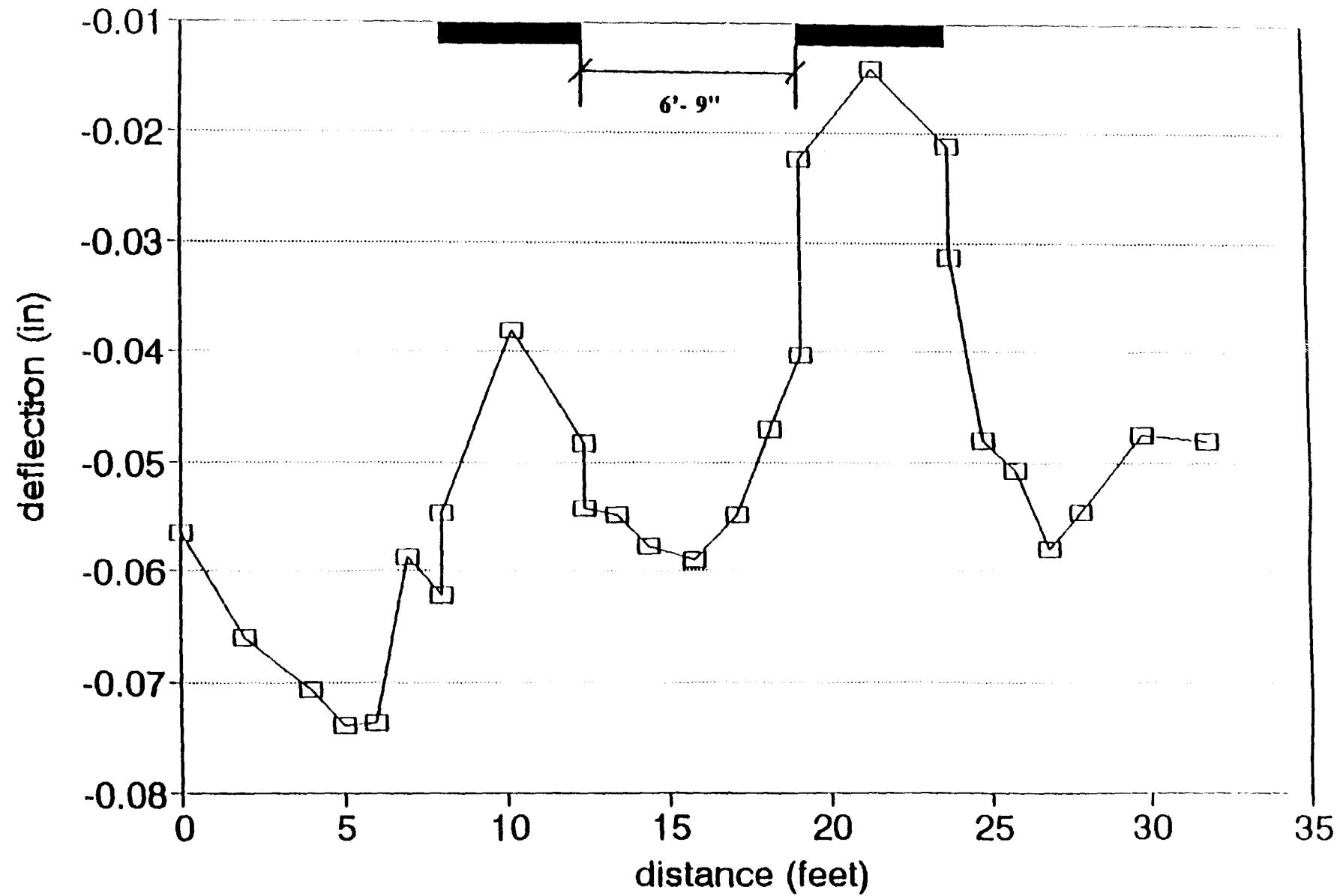


FIG. B.14. Deflections between Multiple Cuts at 3648 Michigan

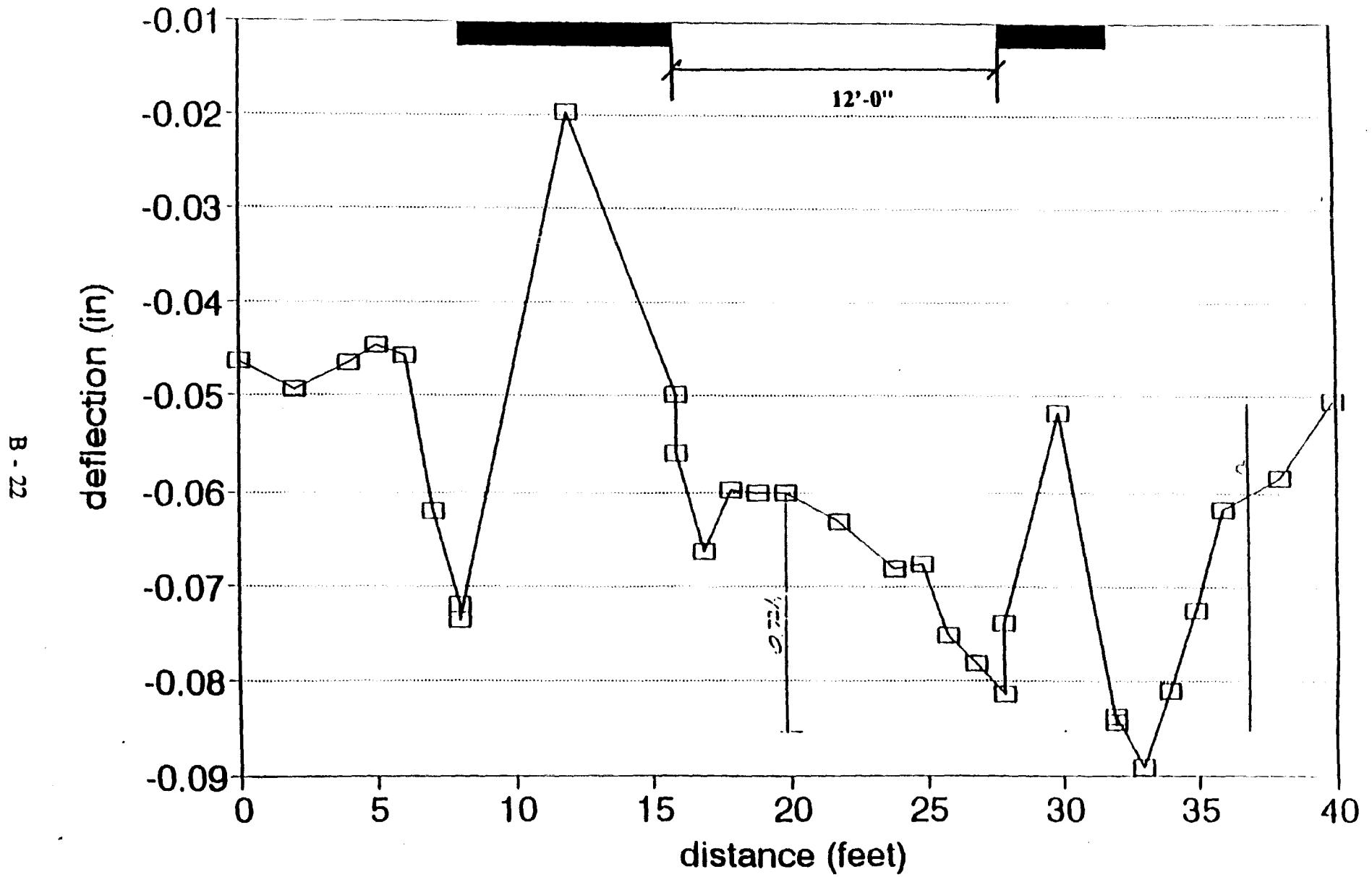
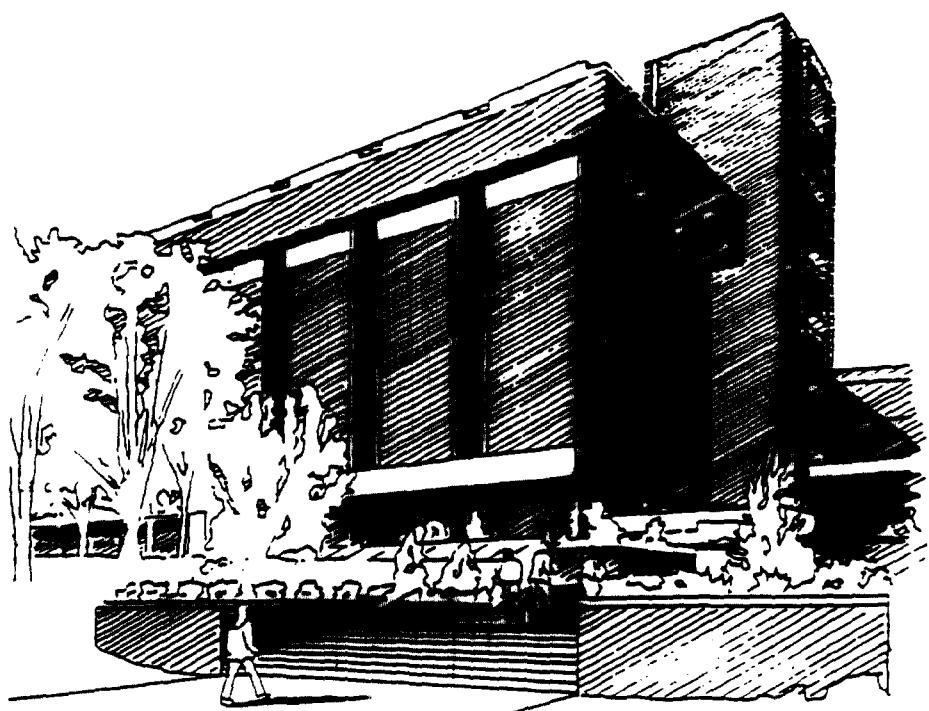


FIG. B.15. Deflections between Multiple Cuts at 3363 Morrison

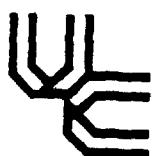
APPENDIX C



UNIVERSITY OF CINCINNATI
COLLEGE OF ENGINEERING

**Distress Identification Manual for
Utility Cuts**

Cincinnati Infrastructure Institute
Department of Civil and
Environmental Engineering



Distress Identification Manual for Utility Cuts

**Cincinnati Infrastructure Institute
Department of Civil and
Environmental Engineering**

**University of Cincinnati
November, 1991**